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LYMPHOID GROWTHS IN THE VAULT OF  
THE PHARYNX

BY

THOMAS R. FRENCH, M. D.

CLINICAL PROFESSOR OF DISEASES OF THE THROAT AND NOSE, LONG ISLAND COLLEGE HOSPITAL,  
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# LYMPHOID GROWTHS IN THE VAULT OF THE PHARYNX.

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BY THOMAS R. FRENCH, M. D.

Clinical Professor of Diseases of the Throat and Nose, Long Island College Hospital, Brooklyn.

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The disease which forms the title of this paper has been productive of a great amount of mischief by impairing the health, or shortening the lives, of a very considerable percentage of mankind, and yet it is only within the past few years that its nature and effects have been fully understood. Until Wilhelm Meyer<sup>1</sup> of Copenhagen, in 1870, called attention to the frequency of the occurrence of, and injurious effects from, hypertrophy of the lymphoid tissue in the pharyngeal vault, the disease was practically unknown. Since then notable contributions have been made

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<sup>1</sup> Trans. Med.-Chir. Soc., London, 1870, Vol. III.



to the subject by Loewenberg,<sup>2</sup> Morrell Mackenzie,<sup>3</sup> B. Frankel,<sup>4</sup> Sir William Dalby,<sup>5</sup> Chattellier,<sup>6</sup> Cohen,<sup>7</sup> Delavan,<sup>8</sup> and Bosworth. But it must be said that comparatively little attention was paid to the subject in this country until in February, 1888, the late Dr. Franklin H. Hooper, of Boston, read his splendid thesis on "Adenoid Vegetations in Children," before the Boston Society for Medical

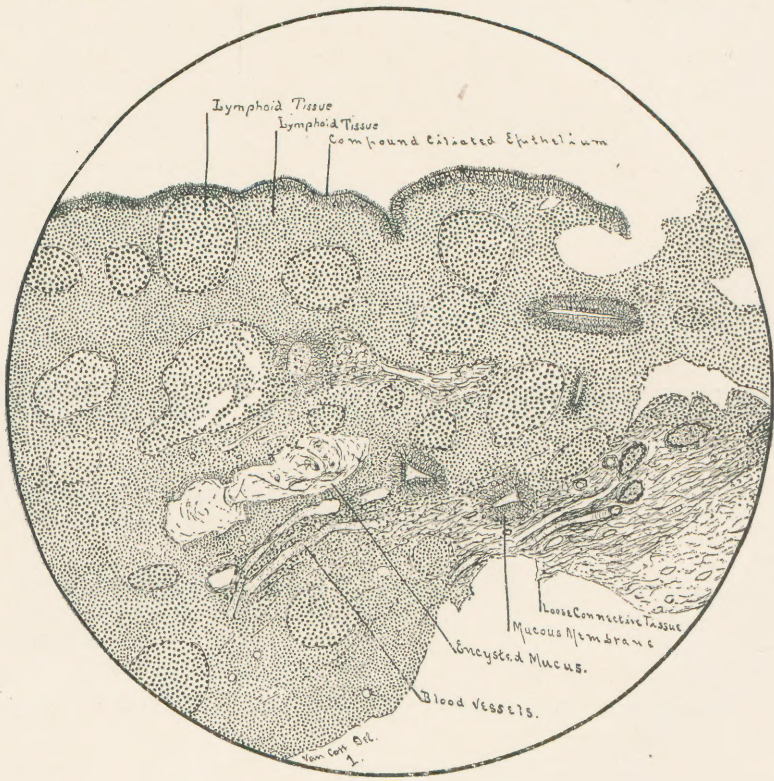


FIG. 1.

Observation.<sup>10</sup> A little later the paper was read again before the Laryngological Section of the New York Academy of Medicine, awakening great interest and enthusiasm. From that time to the

<sup>2</sup> Des Tumeurs Adénoïdes du Pharynx, Paris, 1878.

<sup>3</sup> Dis. of the Throat and Nose, Phil., 1884.

<sup>4</sup> Deutscher Med. Wochenschrift, No. 41, 1884.

<sup>5</sup> The Lancet, Oct. 2, 1886.

<sup>6</sup> Des Tumeurs Adénoïdes du Pharynx, Paris, 1886.

<sup>7</sup> Dis. of the Throat and Nasal Passages, New York, 1879.

<sup>8</sup> N. Y. Medical Journal, Oct. 12, 1889.

<sup>9</sup> Dis. of the Nose and Throat, New York, 1889.

<sup>10</sup> Boston Med. and Surg. Journ., March 15, 1888.



present interest in the subject has been quickened, and although each year the disease is becoming better understood and more generally recognized, still attention cannot be too widely drawn to a subject of so much importance until it is as fully appreciated by the profession at large as it deserves to be. I have, therefore, prepared this paper in accordance with the suggestion of my late

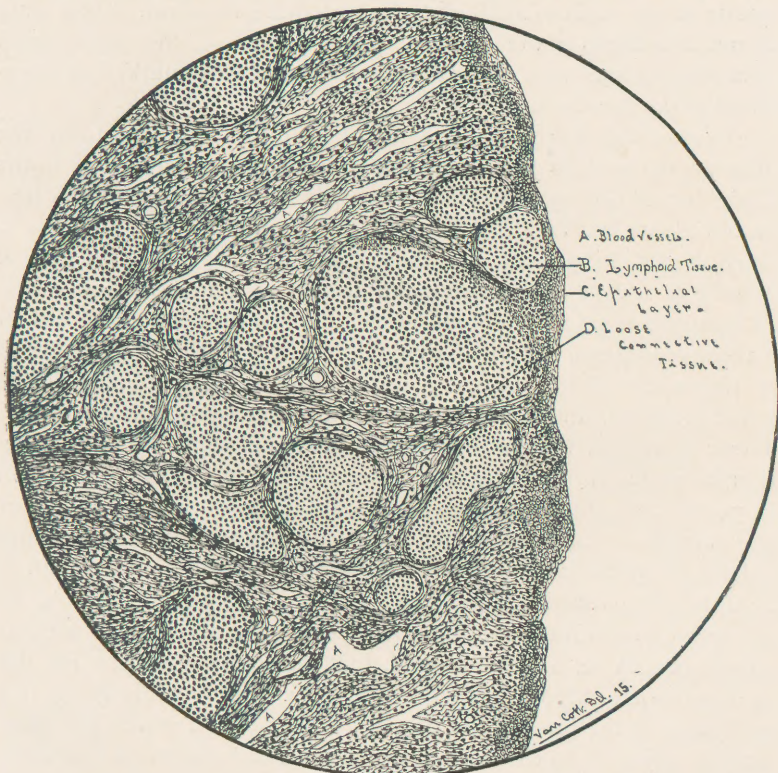


FIG. 2.

lamented friend, Dr. Hooper, and in compliance with the request of a number of physicians, for presentation to this body.

There is no doubt that one of the main reasons for the tardy general recognition of this disease lies in the fact that the symptoms caused by it were, until recently, believed to be due to enlargement of the faucial tonsils; the real cause having been overlooked, lying as it does high up in the pharynx out of the line of direct vision. The weak physical condition, impairment of hearing, facial and chest deformity and various reflex phenomena which result from the failure to recognize and properly treat this disease, which in this climate is to be found in, at least, five in every hun-

dred children, makes it a matter of the highest importance that its nature and effects should be generally known.

Judging from my own experience lymphoid hypertrophy at the vault of the pharynx occurs much more frequently than enlargement of the faucial tonsils. In nine out of every ten cases of enlargement of the faucial tonsils, I have found a mass of lymphoid tissue at the vault of sufficient size to require removal, while only about two-thirds of the cases of hypertrophy of the pharyngeal lymphoid tissue were found to be accompanied by marked enlargement of the tonsils in the fauces.

I submitted fifteen specimens of growths removed from the pharyngeal vault to J. M. Van Cott, Jr., Professor of Pathology in the Long Island College Hospital, for careful microscopic examination. In his report Dr. Van Cott says: "Of the microscopic findings it may be said, in general, that these specimens are composed almost wholly of a very delicate reticular tissue, rich in lymphoid cells, in lymphatics (?) and in blood-vessels. All of the sections reveal, in varying numbers, spherical, ovoidal and irregularly shaped masses of tissue resembling in every respect the solitary follicles of the small intestine, and being, in fact, composed of lymphoid tissue. These lymphoid masses are surrounded in some instances by lymph tissue, in others by a very succulent connective tissue rich in young cells, but of a more distinctly fibrous nature. Some of the masses are covered on their external surfaces with a compound columnar epithelium, very beautifully ciliated, and a few with a compound squamous epithelium. There is no section which, in any way, resembles papillomatous tissue. Of the blood vascular supply it is to be, in general, said, that these channels are for the most part quite atypical in structure, only those vessels lying immediately at the base of the tissue, or that portion which has been directly adjacent to the normal tissue on which the mass depended being of typical construction. Based on these morphological findings lymphomatous hyperplasia is constituted for all the sections without papilloma in any. Only two specimens show a tendency to villous formations and the villousities in these being very small and short."

The masses of tissue vary in density according to the amount of fibrous tissue contained in them. Age seems to have little influence upon the development of fibrous tissue in these growths. In the fifteen specimens examined by Dr. Van Cott, removed from patients varying in age from five to twenty-five years, the least fibrous tissue was found in a mass removed from a boy five years of age, and the most in a growth taken from a girl seven years of



age. Drawings of microscopic sections made from the growths just referred to, are here submitted. (Figs. 1 and 2.) In the first section the tissue is seen to be made up almost entirely of lymphoid tissue containing nodes similar to those in the spleen. The base contains some adult connective tissue, very succulent, very vascular; the vessels being for the most part atypical. The surface of the mass is lined with a compound layer of columnar ciliated epithelium. One or two stenosed cystic gland ducts lined with cuboidal epithelium and containing mucus, are seen near the base of the mass. The second section contains a great deal of white fibrous connective tissue, rather loosely woven around circular, oval and irregular areas of lymphoid tissue, giving the general impression of a cirrhotic process. The surface is lined with a compound squamous epithelium.

Mackenzie of Baltimore, says<sup>13</sup> that the growths which he has seen in his city have been of a papillomatous character; that their structure as seen under the microscope does not differ from that of papillomatous growths in other localities. This belief is, to some extent, shared by Woakes of London. I asked Dr. Van Cott in the examinations he made for me to look carefully for tissue of a papillomatous nature, with the result as stated in his report.

The disease under consideration is generally described as adenoid in character. Adenoid elements enter into the structure of the growth to some extent, but as lymph tissue constitutes the largest part of the mass, lymphoid would seem to be a better term to use in speaking of these masses of tissue. Adenoid and lymphoid are terms often used synonymously by rhinologists and indeed by histologists, especially the older writers who believed that lymph tissue was glandular in character. These growths are almost entirely made up of lymph tissue, and should, therefore, be described as lymphoid and not adenoid in character, as is now the almost universal custom.

Catarrh of the nasal passages and pharynx is mentioned as a cause of the hypertrophy of this tissue, but it probably plays a small, if any part as an ætiological factor of the disease in children. There is always more or less of catarrhal discharge in these cases, but it commonly disappears entirely after the removal of the growths. Later in life repeated catarrhal attacks may act as a cause. The disease is, however, usually congenital and, occasionally, manifests itself in infancy but does not, as a rule, become pronounced enough to cause annoying symptoms until the second or third year. Not uncommonly it begins to appear at a much later period

<sup>13</sup>Trans. Am. Laryngological Ass'n., 1889.

and sometimes it does not develop to a degree sufficient to cause obstruction to nasal respiration till after puberty. McBride saw a case of hypertrophy of this tissue in a lady forty-six years of age, in whom the mass was very large. The oldest person I have seen with this disease was forty-two. Delavan found it in a man over fifty years of age. The same writer is of the opinion that both before and after puberty many cases are the immediate and direct sequelæ of an attack of diphtheria or scarlatina, most commonly of the former.

It is quite a common belief that children affected with enlargement of the lymphoid tissue of the pharynx are particularly liable to the diseases of childhood. I do not know that we have good proof that such is the fact, but when a disease like diphtheria attacks the throat of such subjects they are apt to fare worse, because of the mechanical obstruction caused by the presence of the hypertrophied tissue, than those whose pharynges were previously in a healthy condition.

Many are of the opinion that this affection is usually associated with hyperplasia of the adenoid tissue elsewhere; in other words that it is but a local expression of a general disease. I am inclined to the belief that the affection in the pharynx is, usually, if not always, the cause of the general condition simulating struma found in many of these cases, and that the reason why this condition frequently persists after the removal of the growths is either that the patient's health was seriously injured by the lymphoid tissue in vault of the pharynx, or that the extirpation of the tissue was not complete.

The disease is also considered hereditary because it is sometimes found in the offspring of parents, one or both of whom were the subjects of the affection in youth. I have known the disease to occur in the whole family of nine children of parents bearing every evidence of having been the subjects of the same affection in early life, but I do not think it necessarily follows that such cases are hereditary, for the impaired health of the parents produced by the presence of the mass in the naso-pharynx, or from other causes, would, I believe, alone be sufficient to cause the disease in the offspring. In nearly every case in which I have looked carefully for the cause of this disease in children, I have found that one or both of the parents were of advanced age, or there was a history of deficient nutrition, or some constitutional disorder in one or both of the parents before the birth of the child. I have, however, in a few instances, found the disease in the children of strong, vigorous parents.



The effects and symptoms produced by the mass of tissue in the vault of the pharynx are usually so well marked and characteristic that a diagnosis can generally be made before the vault is explored. In the majority of cases the facial expression produced is, alone, sufficient to indicate the presence of a growth back of the nose. The characteristic changes which occur in the faces of the subjects of this disease consist of a downward inclination of the outer angles of the eyes, flattening of the cheek bones, diminution in the size of the nose and, perhaps, flattening of its bridge, shortening of the upper lip, drooping of the lower jaw and deepening of the lines about the mouth. In some instances the facial deformity resulting from these changes is very great. Deafness occurs in a large proportion of cases and this condition, added to the peculiar physiognomy, gives rise to an appearance strikingly like that resulting from mental deficiency. On this account the subjects of this disorder are, not infrequently, believed to be lacking in mental capacity and treated accordingly.

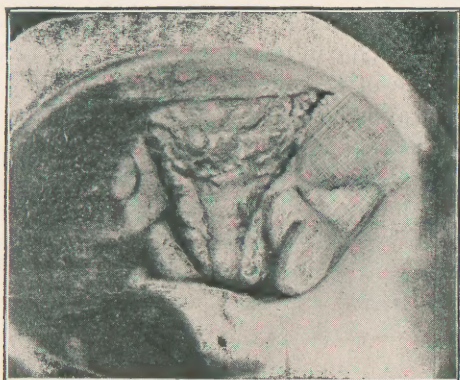


FIG. 3.

Deafness as a complication of this disease occurs in more than half the cases. Blake of Boston, says<sup>14</sup> that evidence of more or less implication of the ears was present in 83 per cent. of the cases he had observed. The causes of the deafness are explained in a variety of ways, the most plausible of which it seems to me, are: (1) deficient air pressure caused by the presence of the mass of tissue in the upper pharynx and consequent interference with the movements of the palate; (2) occlusion of the ear-tract from pressure of the growth upon the orifices of the Eustachian tubes; and (3) extension of catarrhal inflammation from the pharynx. In whatever way the

<sup>14</sup> Boston Medical and Surgical Journal, March 15, 1888.

deafness is caused, permanent structural changes from catarrhal or suppurative processes are apt to occur in the Eustachian tube and middle ear if the cause is not removed.

I have made careful inquiries to determine whether the implication of the ears was, in any way, influenced by the microscopic character of the growths, but with negative results.

The deafness may be constant or the hearing may be affected only during attacks of acute inflammation, to which the lymphoid mass is peculiarly liable. Even small growths may, in this way, excite pathological changes of a permanent character in the auditory apparatus. This photograph, (Fig. 3) was taken of the posterior nares and vault of the pharynx of a man twenty-two years of age. It shows a small growth of lymphoid tissue at the vault which was the seat of frequent attacks of acute inflammation during which the hearing was greatly diminished. The patient has chronic hypertrophic nasal catarrh which has caused considerable thickening of the mucous membrane on each side of the septum. He also has chronic otitis media which was, probably, caused, in part at least, by the irritation occasioned by the presence of the lymphoid growth which can be seen at one point to be in contact with the prominence of the Eustachian outlet.

As the breath-way is confined to the mouth the pressure of the current of air is exerted upon the bony structures of the buccal cavity and more or less deformity of the upper jaw almost invariably results. The hard palate is pushed upwards, the dental arch is narrowed and the teeth grow irregularly and decay early in life. The arching of the hard palate upwards frequently causes deflection of the septum which adds another obstructive element to nasal respiration. Respiration carried on through the mouth diminishes the air supply to the lungs. As a consequence they are never fully expanded and the chest walls sink in, giving rise to the familiar deformities known as sunken sternum and pigeon breast. Not only are the effects of deficient air supply shown in the shape and size of the chest but the whole body is badly nourished. The child is thin, pale and easily fatigued. This, however, is not always the case, for the injurious body effects may not become apparent until childhood has passed and youth is reached. These photographs (Figs. 4, 5, 6 and 7), taken of children before they were operated upon, will show some of the deformities of the chest and characteristic facial expressions produced by this disease. I desire also to present this composite photograph (Fig. 8), of the faces of eight boys, between the ages of three and fourteen, who had lymphoid growths in the vault of the pharynx. It accentuates in a



most satisfactory manner, all the changes in the features and peculiarity in the facial expression resulting from this affection.

The effect of this mass of tissue upon the voice is peculiar and characteristic. The nasal and pharyngeal resonance is lost and



FIG. 4.



FIG. 5.



FIG. 6.



FIG. 7

the voice becomes muffled and toneless. The nasal consonants m, n and ng become b, d and g. For instance, no is pronounced *do*, Minnie *Biddie*, going *goig*, home *hobe*. In singers the presence

of even a small mass of lymphoid tissue back of the nose prevents the production of the higher notes and materially affects the purity of all the tones of the voice. Besides, its presence almost always produces a catarrhal condition of the laryngeal mucous membrane from the straining of the vocal muscles occasioned by the increased force used to overcome the faulty resonance.

As the nasal passages are occluded, food and air must necessarily pass through the same opening, the result being that the child bolts his food to free the way for air, and gastric and intestinal catarrh are the natural consequences. This, undoubtedly, accounts partly for the poorly nourished bodies of many of the subjects of this disease.

The obstructed nasal respiration gives rise to noisy breathing at all times, and at night when the tissues are relaxed the difficulty



FIG. 8.

is increased and the patient snores loudly. Sleep is apt to be disturbed and nightmare is of quite common occurrence. The worn and haggard appearance of many of the sufferers from this disorder is due to their inability to obtain sufficient rest in sleep. A discharge of mucus or muco-pus from the nose, or into the pharynx, is present in a large number of these cases. Other symptoms such as epistaxis, headache, cough, asthma, facial chorea, convulsions, nocturnal incontinence and sweats occasionally occur as the result of this disease.

When enlargement of the collection of lymphoid tissue at the base of the tongue, commonly called the lingual tonsil, is asso-



ciated with overgrowth of the tissue at the vault of the pharynx and hypertrophy of the faucial tonsils, the embarrassment to respiration during sleep is apt to be very great. A boy, six years of age, came under my observation two years ago, whose respiration was extremely embarrassed from this cause. Four years before, his mother fearing that the child would suffocate during sleep, passed her finger into his throat and succeeded at once, by pressing upon the base of the tongue, in establishing free respiration through the mouth, and finding this the only way in which easy breathing could be maintained, she kept her finger in position through that night and for ten hours of every night for four years thereafter, when the obstructing masses were removed.

The symptoms caused by this disease are usually most pronounced in the winter season, for this tissue is particularly liable to attacks of acute inflammation, and a state of turgescence is thus maintained for a large part of the year, but in summer, when colds are few or absent, the growths are much reduced in size and give rise to but little annoyance. The symptoms do not necessarily depend upon the size of the growth. One of the largest growths I have seen caused the fewest symptoms.

The examination necessary to determine the presence of the growth back of the nose in children depends, somewhat, upon their age, temperament and training. Rhinoscopy is, of course, the preferable method. If an examination can be made with the mirror, a cushion-like mass of tissue will be seen occupying the vault. It may be but an appreciable enlargement of the pharyngeal tonsil, or be large enough to fill up the vault to such an extent that the soft palate will be pushed forward. The surface may appear to be smooth or broken by ridges and folds, or the hypertrophied tissue may hang from the vault in nodular, pendulous masses, and it was, perhaps, because of this peculiarity in the appearance of the growth that Meyer gave to the disease the name of *Adenoid Vegetations*, by which name, indeed, it is generally known.

In color the tissue does not, as a rule, differ from that of the neighboring mucous membrane, though in some cases it has a grayish hue. In adults the post nasal probe will often be found to be a valuable aid in making a diagnosis.

If a rhinoscopic examination cannot be made, the head should be steadied by the right hand and the forefinger of the left hand introduced quickly into the mouth until it touches the uvula and lower edge of the velum and then passed upwards, behind the palate, along the posterior pharyngeal wall. If a lymphoid growth is

present, a soft yielding mass with an uneven surface will be felt occupying the upper portion of the posterior wall and vault of the pharynx. The sensation conveyed to the finger varies according to the amount of fibroid changes in the tissue. When but little fibrous connective tissue is present the growth has almost a gelatinous feeling. When there is much of such tissue it may acquire a considerable degree of firmness. The tissue is of such a delicate character that, even with the most gentle manipulation, hæmorrhage is likely to occur, and on withdrawing the finger it will be found to be more or less covered with blood. As Hooper remarks in regard to the digital examination: "Although not painful, the procedure is disagreeable, and as the child is apt to rebel against a second trial, it is important that the first should succeed." Semon suggests that a stream of warm water from a syringe or douche be thrown into one nostril and if it does not flow out through the



FIG. 9.

other he believes that it indicates the existence of an obstruction in the naso-pharynx. Bosworth has modified this method by using a spray of oil. If, when projected into one nostril it does not escape from the other in a cloud, he feels almost certain of the presence of a lymphoid growth in the post-nasal space. If the nasal passages are known to be free from obstruction, and it is difficult or impossible to examine with the finger, the oil test will be found to be a valuable diagnostic aid. Careful inspection of the nasal chambers should, however, always be made before this test is applied. Still this test is by no means as valuable as the digital examination for, unless the naso-pharyngeal cavity is very nearly filled with the growth, it does not interfere greatly



with the passage of the cloud from the atomizer and a moderate-sized growth, giving rise to annoying symptoms, might, in this way, be overlooked.

The appearance and site of the mass in the pharyngeal vault is shown in this photograph, (Fig. 9). The subject of whose pharynx this photograph was taken, was a man twenty-three years of age. A growth of such a size in adults is rarely seen, as it almost always atrophies before, or shortly after, adult life is reached. This growth, however, must have increased in size as the body developed, for nearly the whole of the cavity of the upper pharynx can be seen to be filled with a mass of tissue, almost entirely cutting off a view of the posterior nares. The subject of this photograph knew nothing about nasal respiration, having been a mouth-breather all his life. He was deaf only during attacks of acute coryza. The reason for the deafness at such times can be easily understood by referring to the photograph, in which it can be seen that the growth lies against the Eustachian prominence (only the right shows, the mirror not having been turned far enough to show both), and that but slight swelling would be needed to cause it to occlude the outlets of the tubes.

The photographs of the posterior nares and upper pharynx which have just been exhibited, are the first I have taken to show this disease. I presume they are the first of their kind. The untouched negatives made good prints but were not strong enough to use, unassisted, for reproduction by the half-tone photo-engraving process. I therefore, permitted the artist to strengthen the high lights, and this he has succeeded in doing without, in the least, affecting the conditions or relations of the various structures.

Happily for us, there came to the throat department of the Vanderbilt Clinic this afternoon, a little boy in whom a large mass of lymphoid tissue at the pharyngeal vault presented through a long and wide cleft in the palate, and Dr. Delavan, the chief of the department, having in mind the subject which was to be discussed here this evening, has very kindly brought the child with him that we might see his throat. In no better way could the site, shape and surface appearance of a lymphoid growth be shown, for the child has simply to open his mouth to expose nearly the whole of the mass of tissue. The growth is now the seat of an attack of acute inflammation to which, as I have already said, this tissue is particularly liable. There can be seen upon the surface of the growth quite a number of flattened discs of a yellowish-white color, resembling those which appear on the surface of the faucial tonsils during an attack of acute follicular inflammation. I am sure that we must all feel greatly indebted to Dr. Delavan for having demonstrated to us this interesting and instructive case, for we have, in this way, been able to see a large lymphoid growth from a point of view which is rarely permitted.

If left undisturbed and the subjects grow to adult life, the lymphoid tissue usually atrophies shortly after puberty but as its presence during childhood and youth is often the cause of the greatest physical injury, as I have tried to show, the excess of tissue should be removed. Astringent and alterative remedies brought into contact with the hypertrophied tissues have little effect upon it, and valuable time is wasted by attempts to reduce it in this way. Nothing short of complete removal with cutting instruments will give permanent relief and effect a cure.

The spring and autumn are mentioned by some writers as being



FIG. 10.



FIG. 11.

the preferable time for operating, but if care in regard to exposure is taken, experience teaches that the results obtained are quite as satisfactory at any other season of the year.

The method of operating which I believe to be best adapted for the easy and complete removal of these growths in children is as follows: After being wrapped in a blanket and etherized, the child is placed in a chair, tilted well backwards, and tied to it with long and broad linen bands (Figs. 10 and 11), in an ingenious manner suggested by Drs Dickinson and Dudley, who have assisted

me in a large number of these operations. The chair is then raised slowly to the upright position, to avoid the disturbance in the circulation which sometimes results from too rapid a change in posture, and placed with its back to a window. The operator then seats himself in front of the patient and operates by reflected light with as much ease and accuracy as if the patient were seated in his office operating chair. The mouth is held open with a mouth-distender, the palate drawn forward with a retractor and the mass removed piece by piece with cutting forceps. I believe that the upright position is quite as safe while the patient is under the influence of ether as when the body is prone. If chloroform is used for the anæsthetic the patient should not, of course, be placed in the upright position. It is my habit to begin the anæsthesia in the prone position with a few whiffs of chloroform to avoid the struggles which accompany the use of ether from the start, but the body is not raised until complete relaxation from ether has occurred and then the change to the upright position is made very slowly. I have operated with the patient in the upright position nearly a hundred times and have enjoyed greater advantages without, apparently, increasing the risks to the patient than when, in former cases, the patients were placed in the prone position. If the hæmorrhage should be profuse and the blood allowed to flow unchecked into the larynx, there would be danger of the formation of a clot and consequent suffocation, but the stream of blood can be readily caught in sponges passed rapidly over the posterior wall of the pharynx.

In subjects who yield readily to the influence of ether and in whom the necessary muscular relaxation can be easily maintained, a self-retaining palate retractor, or a rubber cord passed through the nose into the throat and out through the mouth with which to tie up the velum, will, sometimes, aid materially in simplifying the operation by permitting ready access to the upper pharynx with the forceps and to the fauces for wiping away the stream of blood flowing down the posterior pharyngeal wall. In most cases, however, I prefer to use a retractor to draw the palate forward as occasion requires.

If the operator is thoroughly familiar with the various structures in this region, after determining the shape and extent of the growth with the finger, he can remove the greater part of it without digital examination. After the bulk of the mass has been cut out, frequent examinations should be made to determine the situation of the remaining portions. Occasionally the finger may be used as a guide for the forceps for the removal of portions which other-



wise might evade its grasp. With forceps and a strong finger nail, with a sharpened edge, the post-nasal space can be completely cleared of the overgrowth of lymphoid tissue.

Not more than two or three pieces should be removed at a time, for free hæmorrhage occurs each time the tissue is broken and to prevent the blood from flowing into the larynx it should be caught in sponges passed into the back of the throat until the bleeding has ceased, and it rarely continues more than a minute. The sponges should be held in forceps with a good catch to prevent them from slipping from the grasp of the instrument and falling into the larynx. When a portion of the tissue has been grasped by the forceps it should be torn off by making slight traction and twisting the in-

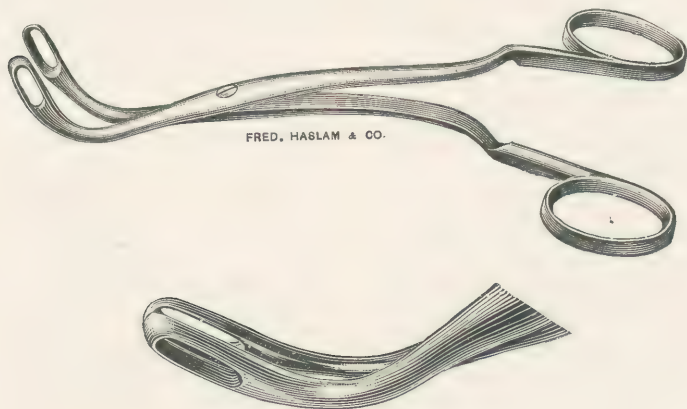


FIG. 12.

strument to the side. Great force should never be used and care should be taken to avoid making any considerable amount of downward traction, for in this way the mucous membrane may be stripped from the posterior pharyngeal wall.

A large number of forceps have been designed for use in this operation and yet I am obliged to confess to having had a pair of special shape made for my own use. (Fig. 12.) My purpose in designing this instrument was to secure a larger bite than is permitted by any instrument with which I am familiar, except the forceps of Juratz and Gradle. The objection to most forceps for this purpose is that too small a bite is taken, and consequently too much time is needed to remove the entire mass of tissue. The amount of hæmorrhage following the removal of as large a mass of tissue as can be grasped by these forceps is never greater than can be readily caught in sponges passed into the fauces.

The forceps are a trifle heavier than Loewenberg's and have a

sharper curve at the cutting end. They open laterally and are fenestrated. The fenestrum is oblong like that of Juratz's and larger than is usual in such instruments. The cutting edge is confined to the convex side of the curve and half of the upper end. The objection to the large cutting forceps and curettes which are designed to remove the growth in a single sweep is that they only remove the bulk of the mass; sufficient, no doubt, to permit the reëstablishment of nasal respiration, but not enough to prevent the continuance of catarrhal discharges and repeated attacks of acute inflammation in the base thus left. It is, I think, the common belief that it is not necessary to remove the entire mass, but that after enough has been removed to permit free respiration, the remnant can with safety be left to atrophy. In those cases in which a large base is left I believe that, not infrequently, they not only do not atrophy, but that fresh inflammation of the tissue ultimately results in an increase of the growth which may bring about the same train of symptoms for which the operation was originally performed. The only cases in which I have been obliged to operate a second time have been those in which the entire mass of tissue was not removed at the first operation. In order to obtain an effectual and permanent cure of this disorder the mass of tissue must be *completely* removed. While my preference is for the size of forceps just shown, there can, of course, be no objection to the use of the Gradle forceps, in skilled hands, or the Gottstein curette for the removal of the bulk of the mass of tissue, if the remaining portion is thoroughly cut out with some smaller instrument. By whatever method the growths are removed, their extirpation should be complete.

After as much tissue has been removed as can be grasped by the forceps, the stump should be thoroughly broken up with the finger nail. Curetting with the finger nail usually causes sharp hæmorrhage, which should be allowed to drain from the nose and mouth by turning the body to the side and resting the head, face downward, on the attendant's knee. The finger nail alone is sometimes used to destroy these growths, but except in very young children, or when the mass is very soft and of recent growth, it is an ineffectual method of removal and should not often be resorted to.

The mouth-distender which I use (Fig. 13.) was designed especially for use in this operation. It is easily introduced and when in position is out of the operator's way and does not interfere with the application of the mouth piece of the ether inhaler.

It is self-retaining to such a degree that when placed between the teeth and firmly fixed by forcible separation of the jaws, it seldom gets loose and frequently remains in position, even though vomiting occurs, during an entire operation. The special features in this instrument consist of two fork-shaped arms placed

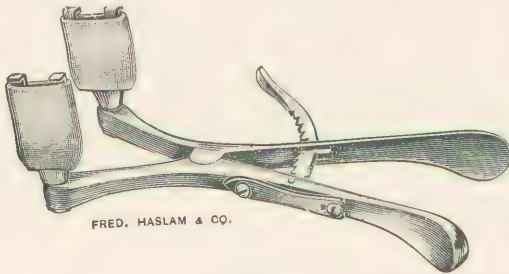


FIG. 13.

at right angles to the blades and attached by joints with a pivot action. These, with a section of rubber tubing stretched over them, are intended to be placed between the teeth. When the instrument is spread open and the jaws separated, the fork-shaped arms, because of their pivot attachment, fit themselves into the irregularities of the teeth and thus take a firm hold.

The retractor is made of aluminum. (Fig. 14).

The administration of ether and the removal of the bulk of the mass of tissue may be accomplished in a half hour or less, but for the complete extirpation of the growth from three-quarters of an hour to an hour is required.

When the faucial tonsils are to be removed, unless they are of such



FIG. 14.

size that it will be difficult to pass instruments and sponges between them, I believe it wise to leave them till after the lymphoid mass is taken out.

Young adults usually possess sufficient courage to permit the removal of the growth with forceps, which, as a rule, can be accomplished with but little discomfort, by the application of a solution of cocaine, in a few sittings.

Hæmorrhage is apt to be free during the operation, but ceases spontaneously after the removal of each piece of tissue. In some cases the loss of blood is considerable. I believe that the hæmor-



rhage is greater when the patient is lying on his back, especially when the head is allowed to hang over the edge of the table, as advocated by some writers, than when the upright position is employed. The blood which escapes the sponges during the operation, when the patient is in the upright position, flows into the stomach and is usually vomited during recovery from ether. Dr. George R. Fowler informed me recently that he had lost several patients, under a year old, after the operation of staphylorrhaphy, from gastro-enteritis caused by the presence of blood in the digestive tract, vomiting not having occurred after the operation. Operation for the removal of lymphoid growths is seldom demanded in children under two years of age. Emesis does not always occur after the operation, but I have never known any injurious effects result from the retention of blood.

Secondary hæmorrhage occasionally occurs after removal of these growths. To my knowledge four deaths have occurred in America from this cause. One, the subject of hæmophilia, occurred in Boston after a digital examination of the upper pharynx. The others occurred in the practice of three skillful operators; two in New York and one in this city. Because of this danger the patients should be kept under close observation for, at least, twenty-four hours after the operation. They should be turned on their sides from time to time so that if hæmorrhage should occur it would be detected by the escape of blood from the nostrils or lips. If severe hæmorrhage should occur a plug of absorbent cotton drawn into the upper pharynx would, no doubt, be sufficient to check it. The instruments necessary for applying a tampon to this portion of the air-tract should, therefore, be kept at the bedside ready for immediate use.

When the little patients are pale and debilitated, as a result of the presence of lymphoid tissue in the post-nasal space, the question is often asked if it would not be best to defer the operation until they can be placed in better condition. Experience has taught us that unless the patient is suffering from some acute disorder, the sooner the operation is performed the better, for they can have no more valuable tonic than that which results from the reëstablishment of nasal respiration.

Suppurative otitis sometimes occurs as a result of the operation. As it has occurred in the practice of some of the best operators, the possibility of its occurrence should always be borne in mind.

The treatment after the operation consists in keeping the child in bed for a day or two, or until the shock of the operation has

passed, and indoors for three or four days or a week, according to the season of the year and character of the weather.

Unless obstruction exists in the nasal passages, nasal respiration



FIG. 15.



FIG. 16.



FIG. 17.



FIG. 18.

is reëstablished as soon as the growth is removed. Deafness is relieved in the majority of cases after the removal of the pharyngeal growth and in nearly all cases the ear symptoms are improved, even though chronic catarrhal or suppurative otitis has resulted

from the disease. The beneficial effects of the operation upon the voice are usually shown at once, but in some instances it is weeks or months before the full benefit is apparent.

The reëstablishment of nasal respiration and restoration of hearing give to the face an expression of intelligence which is striking and most gratifying. Of course, the changes brought about in the bony structures of the face and chest occur gradually. The improvement in the facial expression of one of the subjects, whose photograph has been exhibited, which occurred in two months after she was operated upon, and which fairly represents



FIG. 19.

the changes which occur in the majority of these cases in the same length of time, can be seen in these photographs. (Figs. 15 and 16.) The changes in the face and chest of another of the subjects which were apparent at the end of two years after operation, are shown in these photographs. (Figs. 17 and 18.)

Children who, perhaps, have never breathed through the nose, not infrequently continue the habit of mouth-breathing, and so fail to obtain much of the benefit for which the operation was performed. In such cases I use a device, which I designed for this purpose, which should be worn during sleep until the habit of breathing through the nose is acquired. (Fig. 19.)

There is probably no operation performed in the domain of rhinology the results of which are more beneficial to the patient or gratifying to the operator than those which follow the removal of lymphoid growths from the vault of the pharynx.

#### DISCUSSION.

Dr. D. BRYSON DELAVAN.—Mr. President, while this is by no means a new subject, because known to Wm. Hunter and first fully understood and explained by Prof. Wilhelm Meyer as far back as



1868, I know of nothing more gratifying than the acquiring of new information upon a topic already much discussed. The more familiar one may be with the subject of lymphoid hypertrophy, the more he will necessarily have enjoyed the paper to which we have just listened. It is full of new points and suggestions, alike for those who are well read and those to whom it may be more or less unfamiliar.

The history of lymphoid enlargement at the vault of the pharynx has some points of peculiar interest. It was practically brought before the profession by Prof. Meyer, a Dane; the instrument best adapted to its removal was invented by a French surgeon, Loewenberg; and the best method of operating, that under anæsthesia, was the product of English ingenuity. There is another significant thing about lymphoid hypertrophy; the first to introduce it to the world at large, Dr. Meyer, was an otologist, while its introduction in this country was likewise due to an otologist, Prof. Albert H. Buck. My own attention was called to the subject in 1878, by Dr. Buck, who had been paying much attention to its study since the appearance of Meyer's paper, and who strenuously urged me to learn all about it, insisting that he who would really understand and teach it and who would operate successfully upon the cases that came before him would be one of the greatest possible benefactors to the human race.

This statement hardly requires explanation when we remember how futile our attempts were to cure the evil effects of this condition, until it and the operation for its relief were understood.

The pathology that Dr. French has suggested this evening is particularly appropriate and reasonable. It is strange that the disease should have passed for so long under the name of adenoid, when it is clearly lymphoid. One of the most important things mentioned in the paper has to do with the pathological changes which take place in these growths with the growth and development of the individual. Nothing is more common than to hear of the faucial tonsils that the child will outgrow them; that they will decrease in size, and that we need not worry about them. The same is often taught of the pharyngeal tonsil, namely, that if left to itself, after a certain period of life the trouble will correct itself, and that, therefore, it should not be interfered with. To the best of my observation this statement, although possibly true in some cases, is distinctly untrue in the majority. It is not even true that we may expect atrophy to take place at puberty. From eighteen to twenty-five it may, but not even then in all cases. Without question it is likely to do the most harm at the period of greatest con-

structive activity, that is, during the years when the child is growing most rapidly. The best results may be gained if operation be allowed earlier in life, before puberty rather than after puberty, because after puberty the development of the child is more advanced, and with the child (a mouth-breather) many changes are likely to take place which could have been prevented by the earlier application of relief.

In regard to prognosis, suppose the case to have been one in which the breathing is not materially interfered with, in which the child is actually not a mouth-breather, and in which the enlargement is not very great. Suppose that atrophy does take place, what will be the ultimate result of that process? Do we have an actual disappearance of the lymphoid hypertrophy, or does it remain pathological? I believe that in the vast majority of cases there is left behind a pathological condition. Firstly, there may be incomplete atrophy, that is, the growth may never entirely disappear. This condition may be found in people at middle life. I have seen it in a woman of over sixty, who had very considerable thickening with a clear history of lymphoid hypertrophy during youth. We may have the condition known as Thornwaldt's disease, which appears to be nothing more than neglected adenoid hypertrophy, and the relief of which is commonly the same as that recommended for the same condition in children. Then again, suppose we have instead of deficient decrease in size, a true atrophy of this tissue. We all know that in the adult there are some cases of atrophic disease at the vault of the pharynx which are very stubborn to deal with. I have more than once elicited a history of lymphoid enlargement in earlier life from such adults, therefore, unless there is reason to believe that the growth will actually disappear and leave a healthy condition behind, we are justified in recommending that at as early a period as possible, it be thoroughly removed. I believe this to be particularly true in view of the deleterious effect of lymphoid enlargement, of even a very mild degree, on the hearing. There are cases of loss of hearing without apparent thickening, in which examination by the finger or probe will reveal the existence of an abnormal enlargement.

Lymphoid hypertrophy, therefore, is not by any means a disease the interest of which is confined to childhood, but it becomes a matter of life-long interest and importance to the individual. It is one which cannot be taken in hand too early or dealt with too thoroughly. I have for years heartily agreed with the sentiments which Dr. French has expressed with regard to the thorough

removal of these growths. Almost daily I see in my practice and often read in the special literature of the subject, evidence and proofs that imperfect removal of lymphoid hypertrophy in many instances does not give satisfactory results. Lauranda, of Lille, operated upon a girl of thirteen, and having heard that remnants left in the pharynx would atrophy, was not sufficiently thorough. Recurrence of the growth took place, the second mass being larger than the original tumor. This certainly has been my own experience in one case, and I have no doubt that it has been observed by others.

The history of lymphoid hypertrophy and its treatment may be divided into three general epochs. The first was that instituted by Prof. Meyer when he demonstrated the existence of such a thing, and that it could be cured. The second was marked by the introduction of anæsthesia. The third era is the present time, in which the methods of operation are being more and more perfected. My own experience, extending over a period of fifteen years, has practically covered the history of operations on the pharyngeal vault. At first we did not use anæsthesia. We relied upon the finger nail, nitrate of silver, the Vienna paste, the small curette, and the ring knife of Meyer, and later the forceps of Loewenberg. It was not pleasant at that time to treat these patients, for the operation was difficult, painful, and unsatisfactory. One would often hesitate to go on because of the extreme suffering caused by the necessary manipulations. The day that Dr. Hooper brought from London the news that adenoids could be removed under anæsthesia, was one of the most welcome days in all my medical career, for since then the treatment of these cases has been a delight and a pleasure instead of something to be dreaded. Of course, some will raise the question whether anæsthesia should be employed for so comparatively simple an operation, and a great many think that it is trivial. But if you will operate on adults you will find it is not so. I have operated on a great many thoroughly intelligent young adults, both men and women, persons of excellent judgment, who would not exaggerate their sensations. The operations have been generally done under cocaine. From what these patients have said, as well as from my own observation upon them and others while operating, I am convinced that the operation is never agreeable, that it is sometimes painful, and that in many cases the pain is intense.

In these cases I have found the anæsthetic effect of cocaine to be very unsatisfactory, with children, therefore, there is no doubt that general anæsthesia is a great blessing, and I believe that we



have no right to operate without it. Even with young adults it is often better to operate at once and thoroughly under a general anæsthetic. The objection to anæsthesia is that its use requires a greater amount of time. This objection is hardly valid, however, since the same might be said of any operation. As with other operations, that in question does require for its best accomplishment both skill, thoroughness and a reasonable allowance of time. There are cases in which it is justifiable, of course, but in my own practice I would in many cases prefer to decline to operate rather than withhold what appears to me to be such an essential aid to both operator and patient.

The method of seating the patient described by Dr. French is ingenious, and, I believe, effective, and the new instruments that he has presented are most welcome. The mouth-gag is particularly valuable, and a distinct improvement upon any similar instrument now in use, as practical experience with it will certainly demonstrate. The forceps are ingeniously planned to meet the requirements of a large variety of cases, and are, in several respects, superior to others of the same class. Of the remarkable series of illustrations presented to us for the first time this evening one can only speak in terms of highest praise. They are as valuable and interesting as they are original and unique, and far in advance of any that have thus far appeared.

I am greatly indebted to the reader of the paper for the many suggestions that he has given us, and congratulate you that he has first presented this contribution to your Society.

Dr. J. S. PROUT.—In discussing adenoid growths in their relations to diseases of the ear, I regret to say that I have not much practical knowledge of the subject, and, consequently, when I recognize such cases I refer them to the throat specialists, considering that such a course is best for the patient as well as myself. Dr. French has very fully explained the connection between these adenoid enlargements and the middle ear, so that there is very little for me to say on the subject. Of course, everyone admits that any interference with the physiological function of the Eustachian tube may result in middle-ear disease. These growths may encroach directly on the mouth of the tube causing its partial or complete closure, and thus interfere with the normal interchange of air between pharynx and middle ear. The tube may be free, but the naso-pharyngeal space may be so much encroached on that this interchange of air may be diminished or prevented. The catarrhal inflammation caused by or accompanying them may extend along the tube by continuity of tissue and invade the drum cavities.

Some of the blood for the middle ear is carried there by arteries that run from the pharynx along the upper wall of the tube and returns by veins to the pharynx. Any interference with this return will cause hyperæmia of the mucous membrane lining the cavity of the tympanum, resulting in effusion of serum or mucus, or otitis-media, acute or chronic. It is therefore evident that the successful treatment of the ear complications will largely depend on the proper treatment of these adenoid growths, and, for this part of the treatment, from my point of view, it is best for all concerned to refer the patient to one of the several excellent throat specialists whom we are so fortunate as to have within easy reach in Brooklyn.

Dr. JONATHAN WRIGHT.—Drs. French, Delavan and Prout have gone into this subject so thoroughly that it behooves me only to skim around the edges.

In regard to the occurrence of lymphoid tissue in the vault of the pharynx, if you were to examine all the children you would be surprised to see the number who have no symptoms at all and yet have considerable lymphoid tissue in the pharynx. I have made it a rule to examine the naso-pharynx of every child under ten who comes to be treated for throat trouble, for ear trouble, or other trouble, and I have found a considerable amount of lymphoid tissue may exist there without giving rise to any appreciable symptom. It is true my observation has been largely in hospital practice, and in these cases the people do not observe very closely, but the lymphoid tissue exists normally in the naso-pharynx in considerable quantity. That is, if you cut sections of the mucous membrane of the naso-pharynx in a still-born child, you will find the predominating tissue is lymphoid, and, while I have not examined enough cases microscopically to form an opinion of the normal amount of the growth, clinically I find frequently appreciable enlargement without symptoms. Just how much enlargement we should allow to exist without operation it is impossible to say; every man will be governed by his own feelings in regard to it. I must say that unless there are symptoms, I should want to find quite a large increase of lymphoid material before I made any interference. When the enlargement is trifling in amount it will almost surely leave behind no more scar tissue by atrophy than by operation. However, this is a pretty dangerous doctrine to preach, because those who do not like to operate may allow cases to go by when they really ought to be operated on. It requires some experience to know just when to allow this lymphoid material to pursue its course, and when it is to be operated on.

The difference in the fibrous tissue spoken of by Dr. Van Cott,

in the report is very interesting. I have observed it. I have made sections of a number of these growths (20 or 30) and I have been struck with the same thing, and I have found it more or less so in the faucial tonsil—that the amount of fibrous tissue does not correspond with the microscopical appearance of the tonsil, and not strikingly with the age of the patient. In the faucial tonsil, as a rule, however, there is more fibrous tissue, and we are more liable to have hæmorrhage in adults than in children. In the naso-pharynx, I believe that this does not hold good, because I know of cases of severe hæmorrhage, and the four cases of death referred to by Dr. French were all in children. I have seen in an adult very severe hæmorrhage. So the relation of fibrous tissue in these growths to hæmorrhage is not altogether explainable. Of course when an adenoid atrophies it is simply the round cells that disappear, the fibrous structure that supports these growths remaining behind, and that is what gives us the so-called Tornwaldt's disease. The surfaces of the median and lateral folds of the pharyngeal tonsil by repeated inflammation become agglutinated, and when the tonsil atrophies it leaves behind those adhesions which you also very frequently see between the Eustachian tube and the vault of the pharynx, bands of scar tissue stretching across from the Eustachian tube to the vault of the pharynx. There is nothing more common in the naso-pharynx than this appearance, and yet I have been unable to note any definite aural symptoms set up by this condition. This winter I saw a case where extensive fibrous bands stretched across the pharynx. One band extended a third of the way down the septum, and from the history, which I have forgotten now, I was disposed to believe it was the result of the above process. I remember one case in which there seemed to be a false roof to the vault of the pharynx. When I introduced my finger into the naso-pharynx there was a soft elastic feeling at the roof, and with a little force I put my finger through a membranous sort of tissue which lay below the true vault of the pharynx. After cleaning this out the patient got well.

In regard to the papillomatous condition, I was very much surprised to hear Mackenzie, of Baltimore, quoted as saying that these were papillomatous growths. Certainly there is nothing which at all resembles that under the microscope. Macroscopically they do; that is probably the reason why the statement was made, but of course, under the microscope it is entirely different.

Dr. FRENCH.—He said he found the papillomatous structure under the microscope.

Dr. WRIGHT.—It isn't so, anyhow.



The age at which these growths occasionally persist is very great. Cohen reports a woman of seventy with one almost as large as a walnut, which had existed quite a number of years without giving rise to any symptoms that were noticed by the patient.

The hereditary part of the subject can be understood in this way. I believe that patients with a rheumatic diathesis are more apt to suffer from these growths. You may say that is a pretty safe statement, because if you can look back a generation or two in any family, they are very apt to have had rheumatism, and if they happen to have adenoids you have the thing established. Nevertheless, I believe that rheumatic children will have these growths more frequently.

Another predisposing factor in these cases is the shape of the arch of the palate. I have never been able to understand the explanation usually given of the fact that these growths coexist with high arched palates and a narrow vault of the pharynx. I have heard it explained—I think Chatellier says, it is because of rarefaction of air in the nose on account of stoppage of the naso-pharynx—that is absurd. It might cause rarefaction of air below the growth but not in front of it.

I think the coexistence of these two factors, the high vault of the palate and the distorted septum and narrow cheek bones, is one in which the first factor is probably the bony deformity, adenoids the result. They probably have some effect on the soft tissues, but I must say I cannot see how they produce this narrow arch.

Now, with regard to the looks of these children. There is something about the looks of the child very frequently, but I have seen a number of children with the adenoid look without the adenoid, and other children will have the adenoid growth, without the look, so that is not an absolute rule. The highest vault of the palate I ever saw was in a girl fourteen, and her naso-pharynx was entirely free. She had the open mouth and the stupid look.

In regard to the operation, as Dr. French has said, there are a great many different opinions. I do not think we ought ever to operate without ether, in children. As to taking one or one and a half hours, that is undoubtedly satisfactory from a purely surgical point of view, and very praiseworthy in showing a desire to be thorough in operation, but those who operate rapidly, say in ten or fifteen minutes, and who have done a large number of operations without ever having any bad results would hesitate to adopt the plan of setting the child in an upright position, spending more than an hour, losing more blood than with the other operation, and apparently getting no better results. The results in these

cases, writes a moderately expert operator, are almost uniformly good. Dr. French and Dr. Delavan both said, that unless you get the growths all out, they not infrequently recur. The only case on which I have operated a second time was that of a big, stout girl of ten or twelve, who came to me on one of my busy days. The growth looked so perfectly easy to get at that I slipped up the forceps and took out a large piece, and the next time a smaller piece, and finally had to put her under ether. Two months afterward she came back with the symptoms unrelieved. Examination showed some growths there, and I put her under ether again and cleaned out her naso-pharynx very thoroughly, and every symptom was relieved. That is one case out of a great many, and perhaps I have two or three others which I do not recall now, certainly not a very great many, by the rapid method of operation.

In regard to the pain of this operation, I thought Dr. Delavan rather exaggerated it. It is not a pleasure, but I have a good many adult patients who say the pain is not severe. I operated on a patient to-day in the hospital, a boy fourteen or fifteen, and took out a large growth, and he claimed it was not painful. It seems to me it depends largely on the nervous organization of the patient. Some operations hurt some patients more than others. Where you have an adult patient who can bear a palate retractor in the naso-pharynx, under cocaine, with the post-nasal mirror you have such an advantage in operating that I always try to do it in adults without ether.

Dr. J. M. VAN COTT, Jr.—I regret being unable to hear the first portion of Dr. French's interesting paper. I can only discuss this subject from the standpoint of general pathological laws, and am ready to back personally the microscopic findings made for Dr. French, and which I see are similar to those of Dr. Wright, who has written on the histology of adenoids.

Dr. French's point on the erroneous use of the term "adenoid" seems well taken: the recent writers on pathology here and in Europe are fully in accord with his claim, that these growths should be styled "lymphomata."

With regard to the question as to whether these are papillomata, I certainly agree with Dr. Wright, that they are not in any sense; as I was unable in any section examined to find anything at all in resemblance with papilloma.

Regarding the subject in general, it would seem that these lymphomata must predispose to disease in two ways. First, Dr. French has undoubtedly shown the relation between the lowered vitality and respiratory obstruction and other ill effects produced

by these post-pharyngeal neoplasms, which thus predispose to disease. Second, I believe that the hyperplastic tonsil of Luschka may be the primary seat of tubercular infection more often than is generally supposed, and see no reason why secondary tubercular infection of other surrounding structures might not readily result from metastasis of tubercle bacilli through the rich lymphatic supply. In the same way I believe these lymphomata form good nutrient ground for Loeffler's diphtheria bacillus, and probably other pathogenic organisms; and, because of all these facts think their radical removal the only logical treatment.

Dr. BOGART.—I would like to say a word in reference to the posture best suited for the removal of these growths. It seems to me there is considerable advantage in placing the patient upon his back and allowing the head to hang over the end of the table, if necessary, putting a pillow under the shoulders. By that posture the larynx is raised to a higher plane than the nostrils and even if you have very free bleeding, the blood will flow out of the nose before it reaches the level of the larynx. All danger of strangling is thus avoided, and one need not constantly sponge out the pharynx during the progress of the operation. Neither will the blood flow into the stomach, and the coincident evils are therefore avoided. I have lately had under my care a case of cleft palate in which I found this condition in the throat, and in that case and in the others I have had to treat, I have found a sharp curette with the proper curve very useful.

Placing the patient in the position mentioned and disregarding the hæmorrhage for the time, I have used the curette rapidly and, with the index finger as a guide, have thoroughly removed all the diseased tissue in a very few minutes. The operation finished, the throat is sponged out and if bleeding has not subsided spontaneously, pressure is applied by means of a compress wrung out of hot water, or a bit of iodoform gauze, which latter I have found very useful in controlling capillary oozing.

It has been my experience that whenever we have to deal with tissue resembling this lymphoid tissue, the hæmorrhage ceases sooner if the operation is rapidly completed, and I think the patient loses less blood if the whole thing is done at once, with the further advantage of avoiding the dangers incident to prolonged anæsthesia.

It is true that if the head hangs down there will be more blood in the pharynx than if the patient is in an upright position, but anyone who has to give an anæsthetic would prefer to have the patient lying down. In children I prefer chloroform. With



Junker's inhaler the catheter introduced through the nose can be pushed aside so as not to interfere with the operation. My contention is that even if there is more blood in the region to be operated upon, the loss of blood will be less than if the patient sits up and the operator waits for the blood to cease flowing after each bite.

Dr. FRENCH.—I have already occupied so much time that, at this late hour, I am loath to ask for more but I promise to limit my remarks to a very few words. While a considerable amount of blood flows down the posterior pharyngeal wall during the operation, that which escapes the sponges does not get into the larynx, but finds its way into the stomach and is vomited later. By placing the patient in the upright position I believe that the growth can be removed with less loss of blood than when lying on his back. There is less blood in the head when the body is in the upright, than in the prone position. If a man faints we do not stand him on his feet, but rather place him in a horizontal position so that the blood will flow into his head. Since I have been operating with the body in the upright position the little patients have seemed to feel the effects of the loss of blood less than those who, in former times, were operated upon while lying on the back. If ether is used for the anæsthetic and care is taken to bring the body to the upright position slowly, its administration is as safe as when the patient is lying down.

There seems to be some difference of opinion in regard to the amount of pain experienced, or complained of, when the operation is performed under the local anæsthetic influence of cocaine. I quite agree with Dr. Delavan that even after a strong solution has been applied to the growth, as thoroughly as is possible, the discomfort produced by cutting and tearing out portions of this tissue seems in some cases to be considerable. Patients often describe the sensation as being like that of a toothache, and yet as Dr. Wright says, nervous patients may complain of more pain than is actually experienced. On the other hand these growths are sometimes removed without causing the slightest discomfort to the patient.

To my mind the most important point brought out in the discussion was that made by Dr. Delavan, and also spoken of by Dr. Wright, in regard to the injurious effects produced by the atrophy of lymphoid tissue. This, it seems to me, is a matter worthy of the most thoughtful consideration. If the atrophy of this tissue is apt to produce symptoms which may continue through a lifetime, then the common practice of to-day of leaving a considerable por-

tion of the mass of tissue to atrophy is, for this reason, in addition to those given in my paper, altogether wrong. Lymphoid tissue usually atrophies shortly after puberty, but it does not disappear. It is highly probably that this atrophic condition of the tissue at the vault is often the exciting cause of catarrh of the Eustachian tube and middle ear, which is so common in middle life. If this is true, then it would, of itself, be a sufficient reason for the complete removal of these growths.





